

REMARKS

Remaining Claims

Twenty (20) claims (claims 1-20) remain pending in this application through this Amendment. Claim 8 has been re-amended to re-include the term “area,” which was previously removed because the Examiner appeared to give it no weight; thus, this minor amendment should require no new examination or search. Entry of this Amendment and reconsideration of the rejections are believed proper under 37 CFR § 1.116(b), as the amendments are believed to place the application in condition for allowance or, alternatively, in better form for consideration on appeal.

Rejection of Claims 14-20 under 35 U.S.C. §112, ¶ 1

Claims 14-20 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the specification. The Examiner states that the amendment to recite a “single” fluorescent material overlay at the top end of the plurality of cavities is deemed new matter. Applicants respectfully traverse this rejection and submit that support is found at page 5, lines 4-12 of the specification: “One multi-LED display device includes . . . a fluorescent material overlay at a top end of the plurality of cavities.” The term “a fluorescent material overlay” means “a (single) fluorescent material overlay” or “one fluorescent material overlay.” The article “a” connotes “one” or “single.” It is clear from the specification language that what was intended to be described is a structure having a plurality of LED’s and one overlay serving all of the LED’s. Applicants respectfully request reconsideration and withdrawal of at least this rejection, as it would simplify the issues for appeal in accordance with 37 CFR § 1.116(b).

Rejection of Claims 1-13 under 35 U.S.C. § 102(e) – Reeh

Claims 1-13 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Reeh* (U.S. Patent No. 6,576,930). Applicants respectfully traverse this rejection.

In paragraphs 33-36 of the Office Action, the Examiner responds to Applicants’ arguments with regard to claim 1 that *Reeh* does not disclose a fluorescent material overlay that substantially fully converts all light emitted from the LED to fluorescent radiation. Applicants would like to address each of the Examiner’s comments.

In paragraph 33, the Examiner states: "[I]t is noted that the features upon which Applicant relies [in arguing that Reeh discloses emitting polychromatic light] are not recited in the rejected claims." Applicants respectfully disagree that the relevant features are not recited in the claims. Claim 1 recites that the fluorescent material overlay, due to its selected thickness, substantially fully converts all light emitted from the LED to fluorescent radiation, i.e., all wavelengths are converted, which inherently results in monochromatic light. Applicants' argument was, in essence, that *Reeh* discloses a layer that "converts a portion of the radiation of a longer wavelength into radiation of a shorter wavelength," which "makes it possible to produce light-emitting diodes which radiate polychromatic light, in particular white light" (*Reeh*, Abstract.) In *Reeh*, a portion of the emitted light is converted to a shorter wavelength and a portion remains unconverted, i.e., a longer wavelength. *Reeh* explains that the converted shorter-wavelength portion and unconverted longer-wavelength portions combine as they are emitted from the device to form white or other polychromatic light. Applicants' argument was that *Reeh* et al. cannot be disclosing converting substantially all light emitted from the LED to fluorescent radiation if *Reeh* explicitly states, as quoted above, that only a "portion" of the light is intentionally converted and a portion is intentionally left unconverted, to achieve the goal of producing polychromatic, e.g., white, light.

In paragraph 34, the Examiner states: "[I]n response to applicant's argument that *Reeh* does not teach anything about the thickness of the conversion layer, the Examiner respectfully disagrees. The Examiner notes that *Reeh* discloses that the conversion layer has a constant thickness throughout" Applicants believe their statement was taken out of context. Applicants' argument was not that *Reeh* discloses absolutely no information whatsoever relating to the conversion layer thickness, but rather that *Reeh* does not teach anything about the thickness of the conversion layer having an effect on the amount or proportion of light that is converted. In Applicants' invention as recited in claim 1, the thickness is selected so that it "substantially fully converts all light emitted from the LED to fluorescent radiation." *Reeh* does not disclose a thickness having this property.

Similarly, in paragraph 35, the Examiner states that Applicant does not disclose any particular thickness and indicates that the limitations of claim 1 are met because

Reeh discloses embodiments having constant and varying thicknesses. Again, Applicants respectfully submit that their argument is taken out of context. Applicants do in essence recite a thickness or range of suitable thicknesses in claim 1, though not recited in absolute terms (i.e., units of length). Rather, claim 1 recites that the thickness is that which is sufficient to substantially fully convert all light emitted from the LED to fluorescent radiation. Persons skilled in the art know how to achieve such results by selecting a suitable thickness for the selected conversion layer material. Applicants' point is that *Reeh* not only does not disclose that one should select a thickness that causes the material to substantially fully convert all emitted light but in fact discloses that, whatever the material and structure that is selected, it should convert only a portion of the light. Not only does *Reeh* not disclose using the thickness property to achieve full conversion but *Reeh* discloses that full conversion is not to be achieved by any means.

Lastly with regard to claim 1, in paragraph 36 the Examiner states that "applicant's use of the term 'substantially' in the claim leaves open the possibility that some light may escape unconverted." Applicants respectfully submit that the term "substantially fully converts" is used here to mean that full conversion would be achieved but for undesired imperfections or impurities. It is well established that the terms "substantially" and "generally" in such a context mean as fully as can practicably be achieved but for unintended effects of imperfections or impurities. *See, e.g., Ex Parte Wheeler*, 163 USPQ 569 (PTO Bd. App.) (surface which is "substantially parallel" to a direction is for all intents and purposes disposed as closely parallel to such direction as possible); *Arvin Industries v. Berns Air King Corp.*, 188 USPQ 49 (CCPA 1975) (the term "generally planar" is intended to allow for irregular deviations from perfectly flat and not to broaden the scope of the recited element to encompass distinctly arcuate surface); *Verve LLC v. Crane Cams, Inc.*, 311 F.3d 1116 (Fed. Cir. 2002) (expressions such as "substantially" are used in patent documents when warranted by the nature of the invention in order to accommodate the minor variations that may be appropriate to secure the invention); *Amhil Enterprises Ltd. v. Wawa, Inc.* 38 USPQ2d 1471, 1476 (Fed. Cir. 1996) ("substantially vertical face" construed as the same as or very close to vertical). Applicants are using the term "substantially" in a manner analogous to that in which the term "essentially" has long been used in the chemical arts, e.g., it is well

established that "consisting essentially of X, Y and Z" means "consisting of only X, Y and Z plus possibly some impurities that may be present but would not be significant to the result of the invention."

Clearly, *Reeh* discloses that more than an insubstantial or insignificant portion of the light remains unconverted so that, when it combines with the converted light, the result is polychromatic light. In other words, a substantial or significant portion of the light is converted, and a substantial or significant portion is allowed to remain unconverted. Applicants' use of the term "substantially fully" is merely intended to secure the claim scope to which the invention as it has been disclosed in the specification entitles them by avoiding the argument of a potential infringer that there surely must be some light, even if perhaps not a measurable quantity, that escapes without being converted. It must be recognized that no physical process is perfect, and in this case, it can potentially be argued that some imperfection may result in the escape of some *de minimus* unconverted light. In view of the above, Applicants respectfully submit that the recitation in claim 1 of "substantially fully" is acceptable under the current state of the law to distinguish the invention from that which *Reeh* discloses.

With regard to independent claim 8, the Examiner states in paragraph 37 that Fig. 3 of *Reeh* is interpreted as though the portions identified by reference numerals 4, 6 and 29 were all parts of the "conversion layer." Applicants respectfully point out that portion 29 is a lens or cover glass, which is clearly shown in Fig. 3 as being a distinctly different layer from that of the conversion layer (4,6); it is not within the broadest reasonable interpretation of the claim language to consider the lens as part of the conversion layer.

The fluorescent material overlay recited in Applicants' claims is a layer, and a layer is a structure that inherently extends over an area. Claim 8 had previously recited that the overlay layer had an "area" and that one portion of the "area" included fluorescent material and another portion did not, but Applicants had amended the claim to remove that reference in response to a previous Office Action in which the Examiner appeared to give the recitation of "area" little or no weight. Applicants respectfully submit that the term "area" is well-understood as referring to a region that extends

laterally over a surface. An “area” does not extend in upward or downward directions, but only over a surface. For example, square is an area that extends equal linear distances in two directions on a planar surface. In contrast, a cube, which has six square areas, is not an “area.” Something having a thickness is not itself an “area.” The “area” recited in claim 8 could be, for example, a square, rectangle, circle, parallelogram, or any other suitable “area” in various embodiments of the invention. In any case, the “area” does not have any portions that are on top of or below other portions of it, as the term “area” is limited as well-understood in the technical arts to a surface region. As recited in claim 8, the overlay extends over the area, and a first portion of the overlay has fluorescent material, while a second portion (co-extensive with the first, as is inherent for an “area” over which an overlay “extends”) does not have fluorescent material. Returning to the above-mentioned example of a square overlay, if a line were drawn down the middle of the square, a first area to one side of the line would have fluorescent material while a second area to the other side of the line would not have fluorescent material. Although Applicants believe the language of claim 8 clearly already limited the structure to what has been discussed above, Applicants have amended claim 8 to re-include the term “area.” If the Examiner continues to afford claim 8 what Applicants believe is an overly broad interpretation, Applicants would gladly be amenable to amending claim 8 in any other manner that the Examiner believes would convey the structure discussed above, which as the Examiner apparently understands in principle, is not disclosed in *Reeh*.

For at least this reason, Applicants believe claim 8 and claims 9-13, which depend from claim 8, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

Rejection of Claims 14-20 under 35 U.S.C. § 103(a) - Isoda

Claims 14-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Isoda* (U.S. Patent No. 6,774,406) in view of *Reeh* (U.S. Patent No. 6,576,930). Applicants respectfully traverse this rejection.

For a rejection to be proper under 35 U.S.C. §103(a), there must be some suggestion or motivation to combine the references, and the combination must teach every element in the claim. The rejection is improper because neither of the requirements is met.

Not only is there no suggestion or motivation to combine the references, but the combination would not yield what is claimed. Independent claim 14 and the claims that depend therefrom, are not obvious in view of the combination of *Isoda* and *Reeh* for at least the reason that neither reference, individually or in combination, discloses, teaches, or suggests "a single fluorescent material overlay at a top end of the plurality of cavities." In other words, there is one overlay that serves a plurality of cavities. As conceded by the Examiner, *Isoda* does not disclose, teach, or suggest a fluorescent material overlay at a top end of the plurality of cavities. *Reeh* too does not disclose, teach, or suggest using a "single fluorescent material overlay at a top end of the plurality of cavities," as recited in claim 14. Figure 3 of *Reeh* shows only a single cavity ("9") and a single LED ("1"), and nothing in the Background section of *Reeh* can properly be read to suggest otherwise. For at least this reason, Applicants believe claim 14 and claims 15-20, which depend from claim 14, are not obvious in view of the combination of *Isoda* and *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing, the Applicants believe entry of this Amendment is proper under 37 C.F.R. § 116(b) as placing the application in condition for allowance or, alternatively, in better form for consideration on appeal. The Applicants respectfully request reconsideration and withdrawal of the remaining rejections in view of the above and allowance of the application. Should there be any further questions or concerns, the Examiner is urged to telephone the undersigned.

Respectfully submitted,
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